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What Is Hepatic Coma?

Hepatic coma is a disordered state of consciousness encountered in patients with liver disease of almost all varieties. The picture is characteristically fluctuant and differs in acuteness and in symptomatology. The progress to coma may be a matter of hours or years. Disturbed consciousness with disorder of sleep is a constant feature. Reduction of spontaneous movement, apathy, slowness, and brevity of response are early signs. Deteriorating further, the patient reacts only to intense or noxious stimuli until coma develops resembling a deep sleep. Deterioration may be arrested at any level with either regression or persistency of symptoms. Rapid changes in the level of consciousness are accompanied by delirium.

Personality changes are most conspicuous in association with chronic liver disease. Intermittent changes include childishness, irritability, and loss of concern for family. Even in remission, however, the patients may present similar personality features suggesting frontal-lobe involvement. Intellectual deterioration varies from a slight impairment of organic mental functions to gross confusion. Focal defects appearing in a setting of clear consciousness relate to disturbed visual spatial gnosis and are most easily elicited in the motor sphere as constructional apraxia shown by inability to reproduce simple designs in matches. Writing is typically oblivious of rulings and a daily handwriting chart is a good check of progress. Speech is slow and slurred, the voice monotonous and often faint. In deep stupor, dysphasia becomes marked and is always combined with perseveration.

The syndrome can complicate liver disease of almost all etiologies, but is most frequently associated with virus hepatitis and portal or post-necrotic cirrhosis.

In one series of 66 patients treated by the conservative regimen, 47 reached deep coma and 39 recovered. Results were more impressive if in the cirrhosis and hepatitis group the precomatose state was included because 24 of the 47 patients survived. It is impossible to predict how many of the precomatose patients would have passed into deep coma if untreated or how many would have recovered spontaneously. Assessment of therapeutic results in hepatic coma is complicated by the unpredictable fluctuations in clinical course.

Prognosis depends on the state of the liver cells. The chronic group with relatively good liver function, but with an extensive collateral circulation combined with increased intestinal nitrogen, have the best prognosis. The acute hepatitis group has the worst prognosis. In cirrhosis, the outlook is poor if the patient has ascites, jaundice, and a low serum albumin level—all indicative of poor liver-cell function.

Therapy of hepatic coma is only one facet of the whole management of the patient with chronic liver disease. Altered liver function allowing the passage of toxic nitrogenous substances from the intestine to the brain is

only one aspect of hepatic coma or of liver failure. The regimen described cannot control the electrolyte disturbances and other unrecognized metabolic changes which must be recurring when the liver fails. Moreover, no treatment directed solely toward correction of altered cerebral metabolism can be expected to constantly succeed in these circumstances. The conservative regimen suggested seems the best available and will be modified when other effective remedies are discovered. (Sherlock, S., What Is Hepatic Coma? - Digestive Diseases, 2: 353-361, July 1957)

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Dermatomyositis

This article reviews the course of dermatomyositis in 19 adolescents and children seen at the University of Michigan Hospital between 1935 and 1955. The effects of corticotropin (ACTH) and cortisone therapy were assessed. Several previously unemphasized clinical aspects were noted and the pathological picture assayed.

Dermatomyositis is a disease of infrequent occurrence characterized by insidious onset, nonsuppurative inflammation of striated muscles, and death in about one-half of the cases. Although several hundred case reports of this disease have been published since dermatomyositis was described by Wagner in 1863, most reports are of only one or a few cases.

The initial symptom was facial erythema in 6 patients. This erythema was frequently over the malar areas and bridge of the nose ("butterfly area") and in most instances (five) extended up over both orbital ridges to the eyebrows and temple. The color was described as violaceous, magenta, or heliotrope, thus differing in shade from the erythema of the usual case of lupus erythematosus. In 4 cases, the onset was characterized by fatigue and in 3, by specific muscle weakness. Six had miscellaneous findings. This frequency of initial findings agrees with the consensus of the other large series.

Experience with these 19 adolescents and children would indicate that of those who develop dermatomyositis about 20% will be dead of the disease within the first year. An additional 30 to 40% will die from intercurrent infection within the first 4 or 5 years. Of the approximately 40% who survive, nearly all will have inactive disease within the first 2 years. About one-fourth of the survivors, or about 10% of the total, will have residua of such severity as to confine them to bed; another one fourth, or 10%, will be severely restricted as to activity on account of contractures or muscular fibrosis and dermal induration. About 20% of the total will return to full activity with minimal or no residual signs.

The incidence of remissions and exacerbations was nil in this series. Once inactive, the disease remained inactive. No therapy seemed to have

influenced favorably the outcome of the disease, although steroids in large doses tended to suppress the indications of active inflammation and on occasion led to a feeling of well being. It is noteworthy that none of these patients had joint involvement or arthralgia at any time during their illness, although ankylosis from periarticular fibrosis was not uncommon. The infrequency of true joint symptoms was a finding of the other major series. Most of the patients benefited from physical medicine and orthopedic measures. Those patients in whom such measures were delayed showed a higher incidence of contractures and disabling sequelae. None of these patients had an associated malignancy.

Dermatomyositis would appear to be a clinical entity which obtains its integrity from its unique clinical picture and rather typical course eventuating in death, arrest, or recovery usually in 3 to 36 months. Although the histopathological features are frequently not diagnostic, the prominence of atrophy, necrosis, homogenization, and degeneration of skeletal muscle fibers is suggestive, particularly when accompanied by moderate inflammatory changes. The absence of necrotic, proliferative, or occlusive changes in the vascular walls and the absence of a positive LE-cell phenomenon is a persistent observation in the major reported series of dermatomyositis.

Unfortunately, the appellation, "collagen disease," has obscured the essential uniqueness of this disorder. Admittedly, most careful studies indicate occasional points of clinical similarity between some cases of dermatomyositis and scleroderma. With the increasing accuracy of laboratory aids in the diagnosis of systemic lupus erythematosus, there is a tendency on the part of less careful observers to affix the diagnosis of dermatomyositis to many obscure multisystemic illnesses in which weakness and fatigue are prominent, i. e., "collagen diseases," which are not demonstrably systemic lupus erythematosus or periarteritis nodosa. (Everett, M. A., Curtis, A. C., Dermatomyositis - A Review of Nineteen Cases in Adolescents and Children: Arch. Int. Med., 100: 70-75, July 1957)

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Current Status of Diabetic Renal Disease

The physician in his daily practice cannot fail to be discouraged by the high frequency of vascular lesions in the kidneys and retinas of patients who have had diabetes for a period of 10 to 15 years. Uremic coma has now displaced diabetic coma as a leading cause of death in long-term diabetes. Most disturbing is the recent report by Bell of a large autopsy series of diabetic patients under 50 years of age in which uremia was present in 63% of cases. Marble reports that death in 60% of 119 patients with onset of diabetes before age 15 was caused by renal disease.

It is important that all physicians—whether in general or specialty practice—appreciate the frequency of this "complication" of diabetes and

learn to recognize the clinical entity not only in its fully developed phase, but if possible at the very onset of the disease. The hopeless prognosis offered to these patients focuses greater and more immediate attention on the factors involved in the genesis of premature vascular disease in diabetes. Only by recognition of the earliest manifestations can one hope for eventual prevention or control of this relentless foe.

Twenty years have elapsed since the first description of the characteristic renal glomerular lesion associated with a fully developed clinical syndrome consisting of proteinuria, hypertension, edema, and azotemia. To this original description has been added the finding of diabetic retinopathy because only recently has it been appreciated that the capillary microaneurysm in the retina of the diabetic patient is the morphologic and biochemical counterpart of the intercapillary hyaline glomerular lesion which has been referred to in the medical literature as diabetic intercapillary glomerulosclerosis. Although originally considered to be a disease of the diabetic patient in the fifth and sixth decades of life, it has become increasingly apparent that this "complication" of diabetes is relatively common in juvenile diabetic patients with longstanding diabetes. Analysis of all available clinical reports indicates that there is no real correlation of this syndrome with age, sex distribution, or the intensity of diabetes.

Occasionally, it is possible for the physician to follow the patient accurately over the years from known onset of diabetes through the various progressive manifestations of the clinical syndrome. A retinal microaneurysm is frequently the heralding sign and is soon followed by proteinuria and borderline hypertension. Increasing proteinuria, hypoproteinemia, progressive hypertension, increasing cardiac enlargement, and onset of cardiac or nephrotic edema with a rising blood urea nitrogen follow in slow, but relentless, fashion. To this burden, may be added the effects of increasing coronary atherosclerosis and peripheral vascular disease and, ultimately, the fully developed clinical picture is seen.

More frequently, however, it is not possible for the physician to determine with any degree of accuracy the exact onset of the disease or its full development. Many diabetic patients with this syndrome may show only an occasional stigma and the physician must be alerted to the possible diagnosis.

No specific therapy is available. The diabetes is relatively easy to manage in terms of insulin and diet. The blood pressure may be controlled to some extent by use of antihypertensive medication, but great care must be exercised to prevent sudden falls in blood pressure which may precipitate an acute cerebrovascular accident, coronary occlusion, or increasing uremia.

Food should be planned to maintain the patient in a normal nutritional status as in the case with diabetic diets in general. The fluid intake must be elevated to the point of producing a urine volume of 1200 to 1500 cc. daily. Otherwise, nonprotein nitrogen retention may develop rapidly even on the relatively low protein diets.

The management of edema is most difficult because of the multiplicity of causative factors, such as renal insufficiency of glomerular origin, cardiac decompensation, and hypoalbuminemia, plus the associated effects of arterial and venous peripheral vascular disease. The rate of formation of edema will depend as usual on the intake of salt and water regardless of the basic cause of the edema. Thus, salt restriction will quantitatively delay the accumulation of edema and may even lead to its mobilization. However, the degree of cardiac failure and especially of renal insufficiency will be deciding factors in this process. The salt content in the diet of edematous patients should be less than 2 gm. per day. Further reduction in salt intake as on rice diet or other low sodium regimens should be carried out only under careful supervision of blood electrolytes.

Patients with cardiac failure and diabetic glomerulosclerosis are maintained on digitalis and may be given mercurial diuretics as long as they respond and renal insufficiency is not too severe. Ammonium chloride and other acid forming salts may be helpful in promoting mercurial diuresis when renal function is adequate, but the patient should be carefully observed for development of acidosis. Purine diuretics given orally are of little value and often produce unpleasant gastrointestinal symptoms. Ion exchange resins are useful in the treatment of either cardiac or renal edema, but their production of acidosis and other electrolyte changes in patients with renal insufficiency must be borne in mind; Diamox is of limited value.

Complications of chronic renal failure as well as associated clinical conditions which may further aggravate the underlying situation must be constantly kept in mind because these may be remediable and their intelligent management may do much to maintain comfort and prolong life. These include disorders of fluid and electrolyte balance, severe anemia, renal and extrarenal infection, possible associated obstructive uropathy, and gastrointestinal disturbances with resultant nutritional and vitamin depletion. (Rifkin, H., Current Status of Diabetic Renal Disease: Geriatrics, 12: 406-411, July 1957)

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A Study of Diagnostic Errors

The cornerstone of internal medicine is correctness of diagnosis. In recent years, great emphasis has been placed on the development of diagnostic laboratory tests. However, there has been little interest in a systematic analysis of the frequency and causes for diagnostic errors. In this study, an attempt is made to analyze the causes for mistaken diagnosis over a 7-year period at the Veterans Administration Hospital in Washington, D. C. Data were obtained from a review of autopsy findings as compared to clinical diagnoses. It is hoped that by the pointing out of certain "common denominators"

and frequent pitfalls brought to light by this study that the repetitive types of errors may be reduced.

A review of 1106 autopsies performed at this hospital, 1947 to 1953, correlated with the clinical records showed an incidence of incorrect clinical diagnoses of 6%. The seasonal variation of patients incorrectly diagnosed shows some preponderance during the summer months and may be related to the turnover in house staff occurring at this time. The majority of patients who were misdiagnosed were hospitalized less than one week; only 12% were in the hospital for a period exceeding one month. Munck, reporting from Denmark compared autopsy findings in 1000 cases with clinical diagnoses. Of the 1000 cases, 797 were correctly diagnosed, 87 were "almost correctly" diagnosed (principal disease, but not its exact localization), 49 were "inadequately diagnosed" (an essential disagreement between the clinical diagnosis and the autopsy findings), and 67 cases were incorrectly diagnosed. Fifteen of the 67 cases incorrectly diagnosed died within the first 24 hours. In the present series, 17 of the 64 misdiagnosed cases died within 24 hours.

Despite the "age of antibiotics," infection was the leading cause of death in the present series of misdiagnosed cases. Because a cure might have been effected in some of these patients had the infection been suspected, the importance of making a correct diagnosis is obvious. These infections often were "atypical," in that their onset was insidious without acute systemic manifestations. Neoplasm was the second most commonly misdiagnosed disease. Brain tumor and hepatoma accounted for one half of the misdiagnosed tumors. The slow onset of symptoms, together with the confusion between brain tumor and cerebral vascular accident and the confusion between cirrhosis and the superimposed hepatoma, made the differential diagnosis difficult. A higher index of suspicion will be necessary if these tumors are to be correctly diagnosed.

Among surgical errors, bleeding or perforated duodenal ulcers were the most commonly missed lesions (5 of 10 cases). Dissecting aneurysm of the aorta accounted for one-third of the cardiovascular catastrophes that escaped antemortem diagnosis. In each of these cases, the patient died a short time after admission, but usually there was some feature of the history that made this diagnosis tenable.

Emphasizing the importance of a good history was the discovery that 45% of the misdiagnosed patients were unable to relate any history whatsoever. In most of these cases, some meager information could be obtained from a relative or friend, although in one sixth of this group no information could be obtained from any source.

A discouraging observation—but a correctable one—was the fact that by retrospective analysis over one half of the patients had not been afforded an adequate study (43 out of 64 patients)—an incidence of 67%. When the lack of adequate history was combined with an inadequate examination, the

results were inconclusive and misleading. In 18 cases, a significant sign or symptom was overlooked.

Lack of mental alertness or awareness on the part of the physician in attendance seemed to be a most common cause for diagnostic errors. More often than not, the correct diagnosis could have been made if the responsible physician had been less mentally stagnant about the problem. In this category can be included: (1) failure to obtain routine admission screening tests, particularly a roentgenogram of the chest; (2) ignoring positive symptoms, signs, or laboratory reports which did not fit in with the diagnostic impression; (3) failure to repeat pertinent laboratory tests; (4) ascribing the present illness entirely to complications of a previously diagnosed disease state; (5) false sense of security engendered by misleadingly negative laboratory reports, particularly x-ray films which did not disclose the lesion; and (6) in long illnesses, failure to review and summarize the accumulated data and to repeat the physical examination at intervals during medical supervision.

This study indicates some obvious weaknesses in regard to basic medical training. Knowledge of medical facts seemed to be well inculcated. The mistakes were due not so much to lack of knowledge of factual data as to certain deficiencies of approach and judgment. There appears to be a need for inculcating the habits of critical thought, alertness, and thoroughness in the training regimen. (Gruver, R.H., Freis, E.D., A Study of Diagnostic Errors: *Ann. Int. Med.*, 47: 108-119, July 1957)

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Antigen Dosage in Pollenosis

Because of the relative frequency of pollenosis ("hay fever") in childhood and the tendency for it to be followed by asthma or perennial allergic rhinitis, a critical reevaluation of the treatment of this condition seemed to be indicated. The purpose of this study was to determine by means of a controlled study the relative value of the three most widely used techniques of hyposensitization therapy.

The experimental population was made up of children referred to the pediatric allergy clinic of Strong Memorial Hospital, Rochester, N. Y. The only weed pollen extract used was ragweed.

As each new patient with a history of pollenosis was referred to the pediatric allergy clinic, he was assigned by strictly random selection procedures to one of the following groups: (1) Highest tolerated dose. Treatment in this group was begun with a relatively small dose of ragweed pollen averaging 0.10 ml. of a 1:50,000 dilution of ragweed in Coca's solution. This was equivalent to 10 Noon units of ragweed extract. The dose was gradually increased at weekly intervals until an average dose of 0.50 ml. of between 1:200 and 1:500 dilution (1250-2500 Noon units) was reached. If a child exhibited any signs of a constitutional reaction or had a large local

reaction at the site of injection, the dose was arbitrarily reduced by 0.15 ml. of whatever dilution he was getting at the time. This proved necessary in only one child. In all groups, once the "top dose" was reached, that dose was given unchanged at four-week intervals by the perennial method and continued at weekly intervals during the ragweed season. After the season ended, the four-week interval was resumed until the following ragweed season and so on. (2) The 1:5000 group. This group was likewise begun on relatively small doses of ragweed pollen extract and the dose was increased weekly until an arbitrary "top dose" of 0.50 ml. of a 1:5000 dilution (100 Noon units) was reached. This dose was then continued at the same intervals as in Group 1. This method of treatment has been advocated by Ratner. (3) The 1:10,000,000 group. Treatment of this group was begun with a dose of 0.10 ml. of a 1:10,000,000 dilution of ragweed extract. The dose was increased weekly up to an arbitrary "top dose" of 0.50 ml. of this same dilution (0.50 Noon unit), and this dose was then maintained at the same intervals as in the other groups. This method of treatment has been advocated by followers of French Hansel. (4) Controls. This group received weekly injections of buffered saline labeled "pollen mixture, 1:20,000." A dosage schedule similar to that of Group 3 was set up. The true identity of this mixture was known only to the author.

Rockwell was among the first to advise that "the maximum tolerated dose is the one which gives the best results and, in general, the higher the dose, the better will be the clinical results." This has been the guiding principle of the "highest tolerated dose" method used in this clinic for years. Until now, however, this concept has been taught without benefit of a controlled clinical study.

In evaluating this study, it must be kept in mind that the treatment of pollenosis or pollen asthma may depend to some extent on the locality. Levin stated that "undoubtedly those who treat hay fever on the eastern seaboard can achieve good results with smaller doses due to the lower pollen count generally prevalent in that area as compared to the midwest where the pollen count is often extremely high."

Ratner's recommendation of not exceeding a dose of 0.30 ml. of a 1:5000 dilution of ragweed extract apparently was based on his belief that a larger dose was unnecessary. He believed that the anamnestic response or booster effect of this moderate-sized dose was sufficient to produce just as good clinical results as higher doses which might result in generalized anaphylactic reactions. The present study would seem not to bear out his basic assumption, although children in this study treated by his method did remarkably better than either the controls or those treated by the Hansel method. On the other hand, Ratner's warning of possible generalized reactions from excessively high doses of ragweed pollen is well taken. In Levin's report, for instance, it was noted that constitutional reactions to injections occurred in children in his clinic at the rate of 1 in 2000 injections with use of approximately 10 times the maximum concentration used in this clinic. Levin

recommends a maximum dose of 15,000 to 30,000 Noon units compared with the author's dose of 2500 units. During this study, the reaction rate was one generalized reaction in 3900 injections.

More favorable results might possibly have been achieved in the two groups called "highest tolerated dose" and "1:5000," had the hyposensitization material also included pollens of other weeds as well as extracts of the several mold spores known to be capable of producing rhinitis or asthma during the ragweed season in the area. However, these were deliberately omitted in an effort to simplify the experimental conditions.

In a controlled study of the effect of hyposensitization on ragweed sensitivity, the role of antigen dosage was evaluated by placing children on one of three different treatment regimens or in a control group. Of children receiving the "highest tolerated dose," 68% who had pollen asthma before starting therapy, lost it. None who had hay fever without asthma before treatment developed pollen asthma after treatment was begun. Children receiving an intermediate maximum dosage of 0.50 ml. of a 1:5000 dilution of ragweed pollen extract did almost as well. The control group and the fourth group who received exceedingly minute doses of pollen extract did significantly less well as evidenced by failure of amelioration or prevention of pollen asthma after "treatment" in a year when ragweed pollination was remarkably scant. (Johnstone, D. E., J. Dis. Chil., 94: 1-5, July 1957)

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The Dieting Depression

In recent years, ill effects ascribed to excessive body weight have received wide attention as have the benefits to be achieved by weight reduction. As a result, many physicians and their patients who had formerly looked upon weight reduction as a cosmetic conceit have now come to consider it a therapeutic imperative. The over all results may well be desirable, but the findings of this report indicate that for a large number of overweight persons the current widespread prescription of reducing diets has had unfortunate consequences; for a smaller number, it has been disastrous.

Physicians treating obese persons have long noted widely varying responses to weight loss—from the patient who has never felt better in his life to the one who becomes so weak that he can hardly keep going. Furthermore, anorexia nervosa is frequently reported as beginning during a reducing regimen. There are no published reports of the incidence of untoward reactions to weight reduction programs and any attempt to determine such incidence meets an obstacle encountered in all clinical investigation of obese persons—their tendency to discontinue treatment. Carefully reported series reveal that from 20 to 80% of patients who begin weight reduction regimens abandon them before their completion and, thus, are not available for further

study. These are precisely the patients who are of the greatest interest from the point of view of untoward responses.

An attempt was made to determine a true incidence of untoward responses to weight reduction programs by interviewing 100 consecutive obese persons requesting reducing diets at the Nutrition Clinic of the New York Hospital. During the routine interview, the dietitian took a history of any previous attempts at dieting. No diagnostic formulation was made, but the presence and character of the symptoms were recorded.

Of the 100 patients requesting diets, 72 had previously attempted dieting—several on more than one occasion. Of these 72 patients, 54% reported the presence of symptoms during at least one reducing regimen and 55% of all such regimens were characterized by the presence of symptoms. A common symptom was "nervousness" which included both anxiety and restlessness and which was present in 21% of the patients. "Weakness" was reported by 21% and "irritability" by 8%. Other complaints were less frequent, "fatigue" 5%, and "nausea" 4%.

The high incidence of symptoms reported by the nutrition clinic patients renders more understandable the poor results of weight reduction programs and makes it important to learn more about the nature of these untoward responses. For this purpose, a more detailed study of 25 obese persons was undertaken.

The high incidence of symptoms during dieting suggests that weight reduction may be dangerous for some obese persons. Two questions, however, arise. First, is the concordance of dieting and emotional disorder higher than would occur by chance alone? Second, is the dieting itself perhaps no more than an incidental symptom of a preexisting emotional disorder? Dieting is such a common activity of obese persons that the apparent correlation between it and emotional disturbance could represent no more than the frequent, but entirely random, coexistence of two unrelated variables. The evidence, however, is against this. In the entire non-dieting experience of the 25 patients in this series, there were only 5 illnesses of comparable severity. In contrast, during the far shorter time in which the patients were dieting there were 12 such illnesses. Analysis of these data by means of the chi-square test reveals that the probability of this distribution of illness occurring by chance alone is less than 5%.

There remains the second possibility that for these patients dieting may itself be a symptom of the emotional disorder so that the presence of other symptoms is only to be expected. Although the dieting clearly was of significance in the emotional equilibrium of these patients, it did not appear to be a symptom of emotional disorder in the sense implied by Federn. None of the patients was disorganized at the time she undertook a reducing regimen nor did this undertaking appear to represent a defense against such disorganization.

An attempt was made to determine whether any characteristic of either the patients or the diets might be associated with the occurrence of illness

during weight reduction regimen. Many patients were emotionally disturbed before undertaking the diet, but so were a number who experienced little difficulty during dieting. Furthermore, there was no common premorbid personality type and untoward responses occurred in patients with a variety of psychiatric diagnoses. The age at onset of illness, too, varied widely, one patient being only 17 years old, another 42. All were women, but this may reflect no more than the selection of the original population of 25 obese persons, 23 of whom were women.

The character and duration of the weight reduction regimen did not seem to play a role in the precipitation of the illnesses. A wide variety of diets was used by the 25 subjects in the special study clinic and none seemed to be associated with a higher incidence of complications. Furthermore, the duration of dieting before the onset of symptoms varied widely as did the amount of weight lost. One patient became ill within 2 weeks after starting to diet while another was essentially asymptomatic for a year. The first of these patients had lost only 12 pounds; the latter had lost 150.

One factor which was common to the persons who fell ill was a tendency to manifest the night-eating syndrome. In a previous report, it was noted that this pattern of nocturnal hyperphagia, insomnia, and morning anorexia was present in 20 of the 25 subjects comprising the present series and in none of 38 nonobese women. The pattern occurred during periods of life stress and its presence was associated with a high incidence of complications of weight reduction regimens. Thus, of the 20 subjects who manifested the night-eating syndrome, only 11 were ever able to lose more than one third of their excess weight and in 9 of these subjects this weight loss was accompanied by untoward reactions which are described. Four of the five subjects who showed no tendency toward the night-eating syndrome, on the other hand, had lost comparable amounts of weight without apparent difficulty.

This report surely raises more questions than it resolves. For instance, what are the origins of the symptoms reported by the subjects from the nutrition clinic and by those in the special study clinic? Do the illnesses which occurred in the latter group represent either better documentation or further progression of processes which are common among obese persons during weight reduction regimens? Are these processes primarily physiologic or primarily psychologic in nature and what are the psychophysiologic interrelations?

The nutrition clinic study provides little evidence upon which to base answers to these questions. However, the quality of increased irritability suggests that the symptoms may, in part at least, derive from a fundamental property of protoplasm—increased irritability in response to nutritional deprivation.

Although dieting may be merely coincidental with at least those illnesses which began during treatment, the testimony of the patients does not support this view. None of them looked upon weight reduction in any casual terms and for the majority it had a significance far beyond that of a simple loss of

weight. It involved primitive undifferentiated issues of power and control, dependence and freedom, and the affective quality of the self image. In the light of this testimony, a possible role of dieting in the precipitation of severe emotional disorders suggests itself. For some obese persons, a determined decision to diet may emerge only from a conflict of the intensity necessary to raise these issues; it may be possible to resolve such a conflict only in psychotic terms.

These findings emphasize the vulnerability of obese persons during attempts at weight reduction and suggest that reducing diets should be prescribed only after careful evaluation of the patient's past and present life adjustment. (Stunkard, A. J., The "Dieting Depression" - Incidence and Clinical Characteristics of Untoward Responses to Weight Reduction Regimens: Am. J. Med., XXIII: 77-86, July 1957)

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Variable Appearance of Constrictive Pericarditis

In previous publications, the radiologic aspects of operable congenital anomalies have been stressed. One relatively rare acquired lesion in which significant surgical relief may be afforded is constrictive pericarditis. Because recognition of this disease is sometimes difficult, a review of proved cases was undertaken in order to evaluate the usefulness and consistency of the roentgenologic features.

Twenty-one cases—all proved at surgery and all studied intensively both clinically and radiologically—were analyzed. The clinical laboratory and pathologic data for each case were summarized and the conventional roentgenograms and kymographic studies were reexamined with careful attention to previous fluoroscopic findings. Notations were made as to over all heart size, cardiothoracic ratio, individual chamber size, central and peripheral pulmonary artery size, the presence or absence of pulmonary engorgement, the prominence of the superior vena cava and aorta, the presence, extent, and location of pericardial calcification, and the cardiac pulsations as noted at fluoroscopy and in kymograms.

In 5 cases, tuberculosis was undoubtedly the cause of the pericardial disease. A sixth patient gave a history of an acute illness characterized by chest pain and fever 12 years earlier. The diagnosis of rheumatic fever was made at the time, but no signs of valvular disease were present on admission and calcified hilar nodes were demonstrable roentgeographically.

In 14 cases, there was no history of tuberculosis, chest injury, or acute pericarditis. The tuberculin skin test was performed in 9 of this number and was positive in only one instance. One patient had associated congenital pulmonic stenosis. In his case, the development of acute pericarditis, subsequent effusion, and finally, of a constrictive pericarditis could be clearly traced over a period of about a year. Two patients had

documented histories of rheumatic fever and had rheumatic valvular disease. In one case, a substernal abscess had been drained 10 years prior to the onset of signs and symptoms of constrictive pericarditis.

The early symptoms noted were ascites in 14 instances, dyspnea in 12, ankle edema in 10, and orthopnea in 1. The time from the onset of symptoms until surgery ranged from 2 months to 12 years with an average of 42 months. Distention of the neck veins in the sitting position was present in 14 cases; the venous pressure varied from 153 to 420 mm. saline with an average of 243 mm. saline. The arm-to-tongue circulation time determined in 15 cases varied from 17 to 35 seconds with an average of 24 seconds. A paradoxical pulse was noted in 7 cases and in 11 cases the heart sounds were diminished. On admission, the liver was enlarged in every instance.

In 1937, Claude Beck described as the triad of chronic cardiac compression: (1) a small quiet heart, (2) high venous pressure, and (3) ascites. The myth that the heart in chronic constrictive pericarditis is "characteristically small and normal in outline" has been perpetuated by some even in the contemporary literature. The studies in this series demonstrate that there exists no such thing as a "characteristic" roentgen size or silhouette in chronic constrictive pericarditis. Instead, the heart size may range from normal to massive enlargement. Analysis of the chamber size demonstrates that the predominant enlargement is right ventricular; a study of the pulmonary vascularity indicates that pulmonary engorgement frequently accompanied by pleural effusion is not uncommon. The prominence of the superior vena cava reflects the impedance of cardiac outflow as does the azygos vein prominence.

The observation that cardiac enlargement is a relatively common accompaniment of constrictive pericarditis is by no means unique. The presence of cardiomegaly should not discourage the diagnosis if the clinical data are sufficiently suggestive. The enlargement may not be proportionate to the degree of apparent right heart failure in the sense that the hepatic enlargement, peripheral edema, and venous distention may seem incommensurate with the cardiac size. Pericardial calcification is a highly significant finding in spite of the fact that extensive calcification in the absence of symptoms of pericardial compression has been observed.

The fluoroscopic and kymographic observations indicating that normal cardiac pulsations are not inconsistent with the diagnosis of constrictive pericarditis, deserve comment. Fluoroscopic evidence alone might conceivably be ignored in view of the highly subjective nature of the procedure. The normal kymographic studies are of more interest because adequate base-line studies are available in patients without heart disease. The classical kymographic tracing of constrictive pericarditis shows an abrupt outward excursion during early ventricular filling followed by an abrupt cessation of the lateral border movement and a prolonged flat segment during mid and late diastole. This reflects the inability of the ventricle to expand completely during diastole because of the compression of the thickened pericardium.

The inward border motion at the end of diastole (systolic contraction) and the outward border motion at the end of systole (diastolic filling) form symmetrical limbs of a "V" alternating with the flat segments.

The presence of apparent enlargement of the right cardiac chambers in association with the prominent pulmonary artery segment and large central pulmonary arteries may suggest the possibility of cor pulmonale on the basis of primary pulmonary parenchymal or vascular disease. The absence of an electrocardiographic pattern of right ventricular hypertrophy is useful in excluding this possibility.

That tuberculosis, traumatic hemopericardium, and purulent pericarditis may cause constrictive pericarditis is well established. Rheumatic fever has been said not to be an etiologic factor; yet a number of cases in which constrictive pericarditis has coexisted with rheumatic heart disease have been reported and some authors have expressed the belief that rheumatic fever may play a causative role. (Heinz, R., Abrams, H. L., Radiologic Aspects of Operable Heart Disease. IV. The Variable Appearance of Constrictive Pericarditis: Radiology, 69: 54-60, July 1957)

* * * * *

Herniated Lumbar Intervertebral Disks

Since the original report, in 1934, of Mixter and Barr, innumerable reports on the subject of herniated intervertebral disks have been recorded. At first glance, this condition would seem to offer few problems in diagnosis and management. Yet every series of cases contains a group of negative explorations and a group of poor results. It is apparent that differences of opinion regarding various phases of the management of patients suspected of having a herniated disk do exist. This article reviews some of these differences and reports the authors' experience with 347 explorations for lumbar disk herniation.

In the presence of typical signs and symptoms, the diagnosis of a herniated lumbar intervertebral disk is not difficult. However, the accurate preoperative localization of the level of herniation has offered some problems so that the methods used in localization have been a topic of considerable discussion. It is known that over 90% of lumbar disk herniations occur at the L4-L5 and L5-S1 levels and that, of these, the majority occur at the L5-S1 level. This in itself has led some to believe that accurate preoperative localization is not important. Because of this, they explore the L5-S1 interspace first and in over 50% of the cases the disk herniation is found; if this exploration is negative, the L4-L5 interspace is explored next. Others are of the opinion that in the majority of instances accurate localization can be accomplished on the basis of physical findings alone.

Myelographic accuracy has varied between 75 and 90% in different hands and with the contrast medium utilized. If localization of the level of

disk herniation is to be accurately made on the basis of physical findings alone, it must necessarily be based on alterations of the sensory, motor, and reflex functions. In many of the patients in this series, a clear-cut pattern of sensory disturbance could not be demonstrated. The authors agree with Davis et al., who could find no correlation between the sensory disturbance and the level of disk herniation in a series of 500 cases. Weakness of dorsiflexion of the great toe or foot has been reported to occur with much greater frequency in herniations at the L4-L5 level, but in this series of cases, weakness of dorsiflexion occurred with equal frequency at all levels of herniation. The only physical finding which was found to occur with varying frequency at different levels of herniation was impairment of the ankle jerk.

It would appear from this study that localization of the level of herniation based on physical findings alone was inaccurate. Since the ankle jerk was the only physical finding which varied with different levels of herniation, it would necessarily be the deciding factor if localization were to be accomplished by physical signs alone.

All would agree that x-ray examination of the lumbosacral spine is an important part of the evaluation of every patient suspected of having a lumbar disk herniation. Congenital anomalies, spondylolisthesis, and arthritic changes will be readily demonstrated by appropriate x-ray examination. Narrowing of one or more intervertebral spaces will also be demonstrated.

Iophendylate myelograms were obtained in every patient in this series. The procedure was undertaken as an aid in localizing the level of the lesion and not as a diagnostic measure of the presence of disk herniation. It was an accurate aid in localization in 79% of the cases. Emphasis should be placed on the fact that these films were reviewed without knowledge of the findings, so that only an unequivocal defect was so called. In the authors' hands, the myelogram was the most accurate single factor in localization of the site of the lesion. Its value in demonstrating simultaneous multiple disk herniations and in aiding the reduction of the number of unnecessary interspace explorations had been stressed by others and is supported by this report.

The surgical treatment employed in these cases was simple disk removal in the presence of disk herniation and simple exploration when no herniation was found. Spinal fusion was not performed as a routine procedure concomitant with disk removal nor was it utilized in cases of negative exploration as recommended by some. Spinal fusion was accomplished only when spondylolisthesis was also present; this accounted for only 3% of the cases. Chordotomies and sensory nerve sections were not considered necessary in any patient. If a definite disk herniation was found at the level indicated by preoperative studies, the disk was removed and the procedure terminated. Exploration of additional interspaces in such situations as recommended by Murphy was not accomplished.

The over all results of surgical therapy in this series have been satisfactory. Attempts to correlate such factors as workmen's compensation, government pension, age, arthritis, and psychoneurosis with the end results of treatment were not made. Certainly, these play some part. Nevertheless, 92% of the patients with disk herniations felt that they were benefited by surgery and 88% of the patients with negative explorations felt that they were benefited. Perhaps the improvement in the negative exploration group can be explained by the uncapping of the nerve root accomplished at the time of exploration. No appreciable variation in end results was found when the group of disk herniations with an extruded free fragment was compared with that in which the posterior longitudinal ligament was intact. It is of interest that, although 12% of the patients with disk herniations and 23% of the patients with negative explorations said they were now wearing a back brace part or all of the time, no patient had returned to the authors or said that he went elsewhere for a spinal fusion. (Decker, H. G., Shapiro, S. W., *Herniated Lumbar Intervertebral Disks: Arch. Surg.*, 75: 77-83, July 1957)

* * * * *

Antibiotic Resistant Staphylococcal Pneumonia

Clinical studies in the Department of Medicine at the U. S. Naval Hospital, St. Albans, N. Y., have demonstrated the usefulness of a new antibiotic, Spontin (Ristocetin) in the treatment of antibiotic resistant staphylococcal pneumonia.

During the course of a serious outbreak of hospital acquired staphylococcal infections (hemolytic staphylococcus aureus, coagulase positive) a staff hospital corpsman attending a patient with a staphylococcal infection became ill with pneumonia. A fulminant fatal course ended less than 96 hours later despite administration of penicillin, streptomycin, and novobiocin. The recovered organism was resistant to the foregoing antibiotics. Subsequently, three successive cases of staphylococcal pneumonia appeared, two of which had spontaneous pneumothorax. These patients were critically ill and semi-moribund and were given massive doses of antibiotics (penicillin, streptomycin, erythromycin, et cetera) without satisfactory response. Sensitivity tests revealed resistance to the foregoing agents.

Spontin became available at this time and it was promptly put to use. Clinical improvement in each case with temperature fall by lysis, beginning resolution of pneumonia and general improvement in sense of well being followed directly within 24 to 48 hours.

This antibiotic was given intravenously q4h in dosage of 500 mgms. Dosage was tapered gradually during courses of therapy that lasted as long as one month. Continuous intravenous alimentation was provided and the medication was injected into the tubing.

No untoward reactions save for mild tachyphylaxis were observed, although the medication was given for periods up to a month.

It is well demonstrated that in an urban population as much as 70% of the populace is resistant to penicillin with decreasing frequency of resistance for other wide-spectrum antibiotics. Hospital populations are even less protected.

In emphasis of this fact, an Antibiotic Control Board was activated at this hospital and the antibiotics, chloramphenicol, novobiocin, and Spontin were withdrawn from general issue and restricted in usage subject to the approval of this Board. The effect was salutary. (LCDR D. E. Taylor MC USNR, LT L. R. Schumacher MC USN, CAPT G. L. Calvy MC USN)

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Postgraduate Short Courses for Medical Officers

The following postgraduate short courses will be given as indicated. Eligible officers are those who meet the criteria prescribed by BuMed Instruction 1520.8 of 6 February 1956.

Eligible and interested officers should forward requests via official channels, addressed to the Chief of the Bureau of Medicine and Surgery. Requests for attendance must be received in BuMed at least 60 days prior to commencement of the course requested. Travel and per diem orders chargeable against Bureau funds will be authorized those approved for attendance.

<u>Course</u>	<u>Location</u>	<u>Dates</u>
<u>Forensic Pathology</u>	Armed Forces Institute of Pathology	4-8 Nov 57
<u>Application of Histochemistry to Pathology</u>	Armed Forces Institute of Pathology	2-6 Dec 57 3-7 Feb 58
<u>Pathology of Diseases of Laboratory Animals</u>	Armed Forces Institute of Pathology	9-13 Dec 57
<u>Ophthalmic Pathology</u>	Armed Forces Institute of Pathology	17-21 Mar 58
<u>Pathology of the Oral Regions</u>	Armed Forces Institute of Pathology	24-28 Mar 58
<u>Principles of Mycotic Infection</u>	Armed Forces Institute of Pathology	19-23 May 58

(ProfDiv, BuMed)

Environmental Sanitation Course

Applications are invited from Medical Service Warrant officers interested in assignment to duty under instruction in environmental sanitation at the University of California, Berkeley, Calif. This course, commencing in January 1958, consists of 5 months' academic training in general sanitation, medical statistics, vector control, VD control, bacteriology and communicable diseases. Successful completion of course leads to designation and assignment as Environmental Sanitation officer.

Interested officers having less than 16 years' service should submit applications to reach the Bureau of Medicine and Surgery not later than 2 December 1957. (MSCDiv, BuMed)

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From the Note Book

1. Rear Admiral I. L. V. Norman, Assistant Chief for Personnel and Professional Operations, Bureau of Medicine and Surgery, represented the Surgeon General of the Navy at Groundbreaking Ceremonies for a new Naval Hospital at Great Lakes, Ill. Captain W. C. Calkins MSC USN, Chief of the Navy Medical Service Corps, Bureau of Medicine and Surgery, accompanied Admiral Norman. This ceremony, attended by Members of Congress and representatives of various branches of the Armed Forces, was held on July 31, 1957. (TIO, BuMed)
2. Doctor Howard T. Karsner, Medical Research Advisor to the Surgeon General of the Navy, has been elected Honorary President of the Society for Geographic Pathology. This honor was bestowed upon Dr. Karsner at the Sixth Conference of the Society held in Paris, July 9 - 11, 1957. The International Society for Geographic Pathology is a nongovernmental Society whose aim is the study of relations which may exist between diseases and the geographical areas in which they occur. (TIO, BuMed)
3. Captain J. R. Seal, MC USN, Head of the Communicable Disease Branch, Preventive Medicine Division, Bureau of Medicine and Surgery, was a member of a special team which visited South America, July 10 - 20, 1957, in connection with the World Health Organization Study Program on Influenza. Captain Seal is Chairman of the Advisory Committee for the World Health Organization Influenza Study Program in the United States. The trip was arranged by the Pan American Sanitary Bureau, Washington, D. C. (TIO, BuMed)
4. In recognition of a heroic deed, Jimmy Ray Wood, hospitalman, USNR, was congratulated and commended for his outstanding conduct in an extreme emergency by Captain H. C. Oard MC USN, Commanding Officer, U. S. Naval

Hospital, Bainbridge, Md. Wood was commended for saving the life of at least one and possibly three other persons and for trying to save the life of a sailor on leave who burned to death in a home on Highway 55 between Varina and Fuquay Springs, N. C., May 19, 1957. (USNH, Bainbridge, Md.)

5. Edmund Jacobson, M. D., Ph. D., Director, Laboratory for Clinical Physiology, Chicago, Ill., addressed members of the staff, Medical Corps Indoctrinees, and Medical Clerks at the Philadelphia Naval Hospital, 16 July, 1957, on Tension Disorders in Medicine. (USNH, Philadelphia, Pa.)

6. The first supplies of a vaccine against Asian influenza are expected to become available to the public during September 1957. Six manufacturers licensed to produce this vaccine have set a production goal of at least 60 million cc. (doses) by February 1, 1958. This involves hiring additional personnel and operating two or three shifts 7 days a week. (PHS, HEW)

7. The following lantern slide sets have been completed and are now available on a loan basis: AFIP Activities, consisting of 26 color 2" x 2" slides; and Tumors of the Lower Respiratory Tract, (selected slides from fascicle) consisting of 109 black and white and 7 color 2" x 2" slides. (AFIP)

8. Arsine poisoning is an infrequent emergency calling for heroic and immediate measures if the hemolytic and toxic effects of this gas are even hoped to be overcome. Arsine is capable of being evolved whenever contaminated ores containing arsenic come in contact either with a hydrogen ion from the action of acid on metal or with aluminum used as a finely divided wetted dross. The importance of the part industry and other responsible agencies must play in prevention is stressed. (Arch. Int. Med., July 1957; LCDR W. J. McKinstry MC USNR, J. M. Hickes, M. D.)

9. Measurements of the gonad dose received during routine roentgenography are presented with some statistics of the distribution of these examinations in the population. It is calculated that the average dose due to these examinations accumulated through age 30 is less than 25% of the dose accumulated in that time from natural background radiation. (Radiology, July 1957; M. S. Billings, M. D., A. Norman, Ph. D., M. A. Greenfield, Ph. D.)

10. The results of a study of echinococcosis in Alaska indicate that the disease is widespread both on the Alaskan mainland and the Bering Sea Islands. Two etiologic agents have been demonstrated. These have widely separated epizootiologic and epidemiologic characteristics. (Am. J. Med., July 1957; T. R. A. Davis, M. D.)

11. A dimethicone-containing ointment (Silicone) has proved highly effective as a skin protectant in 90% of a selected group of surgical patients. These

patients had lesions which produced continuous or intermittent drainage from either the alimentary or genito-urinary tract. (Arch. Surg., July 1957; B.N. Carter II, M.D., R. T. Sherman, M.D.)

12. In 202 children given a combination of penicillin and probenecid, maculopapular eruptions occurred which appeared to be benign in character. The incidence of these rashes seemed to be related to the duration of therapy rather than to the amount of probenecid given. (Dis. Chil., July 1957; B.B. Breese, M.D., F.A. Disney, M.D.)

13. Twenty-nine proved cases of sarcoidosis of the myocardium are reviewed and an additional case is reported. (Circulation, July 1957; R.A. Peacock, M.D., et al.)

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Navy Consultants Visit U. S. Armed Forces Hospitals

For a two-week period in the latter half of April 1957, 12 Naval Medical Consultants including 6 Naval Reserve Medical officers on temporary active duty presented a group of formal papers, made ward rounds, and consulted with the Medical officers at the Tripler U. S. Army Hospital in Honolulu, the U. S. Naval Hospitals, Yokosuka, Japan, and at Guam. In addition, visits were made to the University of Tokyo Medical School and Hospital, the Cancer Institute of the Japanese Foundation for Cancer Research, the Medical Institute of the Sasaki Foundation in Tokyo, and the Surgical Clinic of Professor Komei Nakayama at the Hospital of Chiba University, Japan. During these visits, the consultants were impressed and pleased by the residency and intern training program of the various U. S. Armed Forces Hospitals, the excellent care that patients were receiving, and the efforts being made to carry out clinical and experimental investigations. Many interesting things were seen at the University of Tokyo Hospital and at Professor Nakayama's surgical clinic (Chiba). The experimental studies in cancer by Professor Yoshida at the Cancer Institute (Tokyo) were original, valuable, and well controlled.

On the flight from Guam to Honolulu, a stop was made at Kwajalein and ward rounds were made with the two Naval Medical Officers in charge.

At the author's request, Colonel W. F. Bowers, Chief, Department of Surgery, Tripler U. S. Army Hospital, was asked to contribute to the A. M. A. Archives of Surgery an article on the surgical residency and intern training program at that hospital; and, in addition, to prepare abstracts of the papers on Surgery in Acute Trauma presented at a symposium held at the Tripler U. S. Army Hospital, April 1-5, 1957. These articles will also appear in the A. M. A. Archives of Surgery. In a later issue, a more detailed report of the visits to these and other hospitals will appear.

(RADM Waltman Walters MC USNR)

Board CertificationsAmerican Board of Anesthesiology

LT Elbert L. Close, Jr. (MC) USNR (Inactive)

American Board of Dermatology

CDR Judson H. Jenkins (MC) USN

American Board of Internal Medicine

LT Irving P. Ackerman (MC) USNR (Inactive)

LT John L. Ayer (MC) USNR (Inactive)

LTJG Angelo P. Creticos (MC) USNR (Inactive)

LTJG Henry D. DeYoung (MC) USNR (Inactive)

LT Richard T. Donelan (MC) USNR (Inactive)

LTJG William J. Donnelly (MC) USNR (Inactive)

LCDR Lay M. Fox (MC) USN

LT Robert C. Fruin (MC) USNR (Inactive)

CAPT Rodney R. Gleysteen (MC) USN

LT Jack E. Goodwin (MC) USNR (Inactive)

LTJG Edward M. Hard (MC) USNR (Inactive)

LT Harry W. Hoegemeier (MC) USNR (Inactive)

LT Albert M. Huggins (MC) USNR (Inactive)

LT Warren C. Jenkins (MC) USNR (Inactive)

LT James E. Kelsey (MC) USNR (Inactive)

LT Norman Makous (MC) USNR (Inactive)

LTJG Farahe Maloof (MC) USNR (Inactive)

LT Paul S. Metzger (MC) USNR (Inactive)

LT Robert W. Pringle (MC) USNR (Inactive)

LT Richard L. Schafer (MC) USNR (Inactive)

LT Earle U. Scharff, Jr. (MC) USNR (Inactive)

LT Charles M. Sinn (MC) USNR (Inactive)

LT Thomas G. Skillman (MC) USNR (Inactive)

LT Frank P. Smith (MC) USNR (Inactive)

LTJG Hubert E. Smith (MC) USNR (Inactive)

LT Jason N. Smith Jr. (MC) USNR (Inactive)

LTJG Harvey V. Sparks (MC) USNR (Inactive)

LT Ralph H. Swerdlow (MC) USNR (Inactive)

LTJG Robert G. Taylor (MC) USNR (Inactive)

LT Robert W. Weber (MC) USNR (Inactive)

LTJG Richard L. Witt (MC) USNR (Inactive)

American Board of Obstetrics and Gynecology

CDR Charles F. Clinie, Jr., (MC) USN

LCDR Deane E. McLeod (MC) USN

American Board of Obstetrics and Gynecology (continued)

LCDR Vernon J. Merkle (MC) USN
 LT James H. Nelson (MC) USNR (Active)
 LCDR Frank Ostapowicz (MC) USN
 CDR Daniel M. Shook (MC) USN
 CDR DeWitt S. True (MC) USN
 LCDR Winston H. Weese (MC) USNR (Inactive)
 LCDR Peter F. Wells, 2nd (MC) USN

American Board of Ophthalmology

CDR Richard E. Lieurance (MC) USN

American Board of Orthopedic Surgery

CAPT William C. Cantrell (MC) USN

American Board of Preventive Medicine

CAPT John S. Gruggel (MC) USN

American Board of Psychiatry and Neurology in Psychiatry

LT Kenneth D. Gaver (MC) USNR (Inactive)

American Board of Radiology

LT Bernard H. Cobetto (MC) USNR (Inactive)
 LT Robert E. Kasper (MC) USNR (Inactive)
 LT Ernest G. McKay (MC) USNR (Inactive)

American Board of Surgery

LT Robert D. Harwick (MC) USNR (Inactive)
 CDR Harry P. Mahin (MC) USN
 LTJG Kenneth Vandenberg (MC) USNR (Inactive)

American Board of Urology

LTJG Patrick J. Lavelle, Jr. (MC) USNR (Inactive)
 CDR Charles W. Lewis, Jr. (MC) USN

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Reunion at National Naval Medical Center

A reunion of all officers who were attached to the National Naval Medical Center, Bethesda, Md., during the period, 5 February 1942 and 15 September 1945, is being planned. This reunion will be held at the Center 26 October 1957. All officers who are interested in attending are requested to contact the Reunion Committee Chairman, Captain H. S. Hoffman MC USNR (Ret), 3118 16th Street, N. W. Washington 10, D. C. Full details will be supplied by the Committee.

BUMED NOTICE 7312

23 July 1957

From: Chief, Bureau of Medicine and Surgery

To: All BuMed Managed Activities

Subj: Expenditure Account Numbers; clarification of

Ref: (a) NavCompt Manual, vol 2, chapter 4

This notice clarifies the use of certain expenditure accounts.

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BUMED INSTRUCTION 6320.24

30 July 1957

From: Chief, Bureau of Medicine and Surgery

To: U S. Naval Hospitals, Continental United States

Subj: Screening of patients prior to transfer to VA hospitals

Ref: (a) BuMedInst 6320.11, Subj: Transfer of naval patients to Veterans
Administration hospitals

(b) Art. 12-4(7) ManMed

Encl: (1) Guide for requesting memorandum ratings from VA

This instruction establishes procedure for determining eligibility of certain naval patients for hospitalization in facilities of the Veterans Administration prior to effecting transfer in accordance with reference (a).

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BUMED NOTICE 6750

2 August 1957

From: Chief, Bureau of Medicine and Surgery

To: All Ships and Stations Having Dental Officers Regularly Assigned

Subj: Conversion of Dental Operating Units to Higher Speed Operation

This notice announces continuation in fiscal year 1958 of the program to convert dental operating units to higher speed operation; to furnish information, guidance, limitations, and instructions relative to procurement of non-standard items required for conversion; and to replace items worn out by use.

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DENTAL**SECTION**

The Surgeon General Extends Forty-Fifth
Anniversary Greetings

Rear Admiral B. W. Hagan, the Surgeon General of the Navy, addressed the following letter to Rear Admiral R. W. Malone, Assistant Chief for Dentistry and Chief, Dental Division, Bureau of Medicine and Surgery:

"Rear Admiral R. W. Malone (DC) USN
Bureau of Medicine and Surgery
Navy Department
Washington 25, D. C.

My dear Admiral Malone:

On this occasion, the 45th Anniversary of the founding of the Navy Dental Corps, it is a pleasure for me as Surgeon General to extend my sincere congratulations to you and to every member of your Corps.

Much progress has been made since the Dental Corps was established on 22 August 1912 by the provision of the Naval Appropriation Act which authorized the appointment of 'not more than thirty assistant dental surgeons to serve professionally the personnel of the Naval Service.' In serving professionally the personnel of the Naval Service for the past 45 years, the Dental Corps has been an important member of the Navy health team. The Dental Corps has justly earned its reputation for being a successful and progressive organization. It has not only kept pace with the rapid advancement of the dental profession in this country but has led these advances in many instances. The Bureau is especially proud of the pioneer work done by the Dental Corps in the fields of: training for care of mass casualties, establishing modern hospital dental services, developing high speed operative dentistry techniques, and initiating formal dental specialty training programs.

During the past year the Navy Dental Corps has made excellent progress in several difficult programs. I was especially impressed by the prompt and effective manner in which dental care was extended to overseas dependents when the Dependents' Medicare Act became effective last December. Equally as important was the success of the Navy Dental Corps Operation Build-Up in helping increase the number of Regular Navy dental officers from 809 to 931 during the past fiscal year. Of course, the most important accomplishment of the Dental Corps has been the excellent level of dental care which its members have provided the personnel of our Navy and Marine Corps.

On this 45th Anniversary of the Dental Corps I also wish to extend my congratulations to the dental technicians, Dental Service Warrant Officers, and Medical Service Corps Officers whose daily work and loyal support have contributed so much to the accomplishments of the Navy Dental Service. I join all of you in looking forward with confidence to another year of successful achievements.

Anniversary best wishes,

/s/ B. W. HOGAN

B. W. HOGAN

Rear Admiral (MC) USN"

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Deep Freeze II Navy Dental Officers
Participate in IGY Activities

Two Navy Dental officers are assigned to the wintering-over group of Navy and civilian scientists of Operation Deep Freeze II which is spending 18 months in Antarctica to participate in the International Geophysical Year activities. LTs Robert J. Adams and Donald C. Hauch of the Navy Dental Corps are providing dental care for the personnel stationed at McMurdo Sound and Little America and are conducting research studies related to various dental conditions. The research program which was outlined by the Committee on Dentistry of the National Research Council, National Academy of Sciences, is under the supervision of CAPT William R. Standmeyer DC USN of the Naval Medical Research Laboratory, New London, Conn.

The program involves studies of various conditions occurring in the hard and soft tissues of the oral cavity as a result of the extreme cold and adverse living conditions of Antarctica over a prolonged period. Radiographic and photographic records are being maintained and laboratory and

bacteriologic studies are being conducted in an attempt to ascertain the inciting cause of all dental complaints. Preliminary work for the dental studies was accomplished by LT David Knoedler DC USN who as a member of Operation Deep Freeze I established dental operating facilities and a laboratory at McMurdo Sound. After spending more than a year at Antarctica, LT Knoedler was relieved by LTs Adams and Hauch who expanded the program to include Little America and other Antarctica bases.

* * * * *

Shortage of Dental Research Technicians

A recurring problem which confronts the Navy Dental Research Program is an acute shortage of enlisted dental technicians who have been trained to assist in the investigations. There are valuable training opportunities for technicians who desire a career in dental research and the challenge of helping to open new horizons in dentistry. A desirable requisite for assignment to a dental research facility is completion of a course in Clinical Laboratory Techniques. Interested personnel are urged to apply for this course in accordance with BuMed Instructions 1510.2A and 1510.4B. Applicants should be eligible for a minimum of two years' shore duty after the convening date of the class. The next classes will convene on 12 November 1957 and 12 May 1958.

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Applications Desired for Instructor - Dental Technician School

An occasional opportunity occurs for assignment of enlisted instructors to the Dental Technicians Class "A" and "C" Schools at the Naval Administrative Commands, Bainbridge, Md., and San Diego, Calif.

Enlisted instructors may also be assigned to the Advanced General and Prosthetic Class "B" Schools at the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md. It is particularly desirable for instructor applicants for the advanced Class "B" Schools to be in pay grade E-7.

Requests for duty as instructors should be submitted in accordance with BuPers Instruction 1306.22C.

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Operation Build-Up - Navy Dental Corps

On June 20, 1957, a new peak of 900 regular DC officers were on active duty; 201 dentists have chosen Navy careers since August 1954. (See chart)

DENTAL OFFICERS APPOINTED IN THE U.S. NAVY—

DURING THE PERIOD
10 JUNE 1957 TO
20 JUNE 1957

JOSEPH R. BABACEK

ERWIN J. HEINKEL, JR.

JACK E. HYDE

ELMER J. RUISE

DAIL E. BARLOW

GEORGE R. BUTLER

CHARLES J. CUNNINGHAM

CHARLES R. DIEM

ALBERT M. D'ONOFRIO

RICHARD C. EDWARDS

ROBERT K. FENSTER

JOHN T. FORTE

ARTHUR M. GENSIOR

RAY F. GHERARDI

NORMAN B. GILES

DAVID M. GRONE

ROBERT D. HECKEL

JAMES R. McANDREW

WILLIAM J. McDONNEL

DEAN T. MIELKE

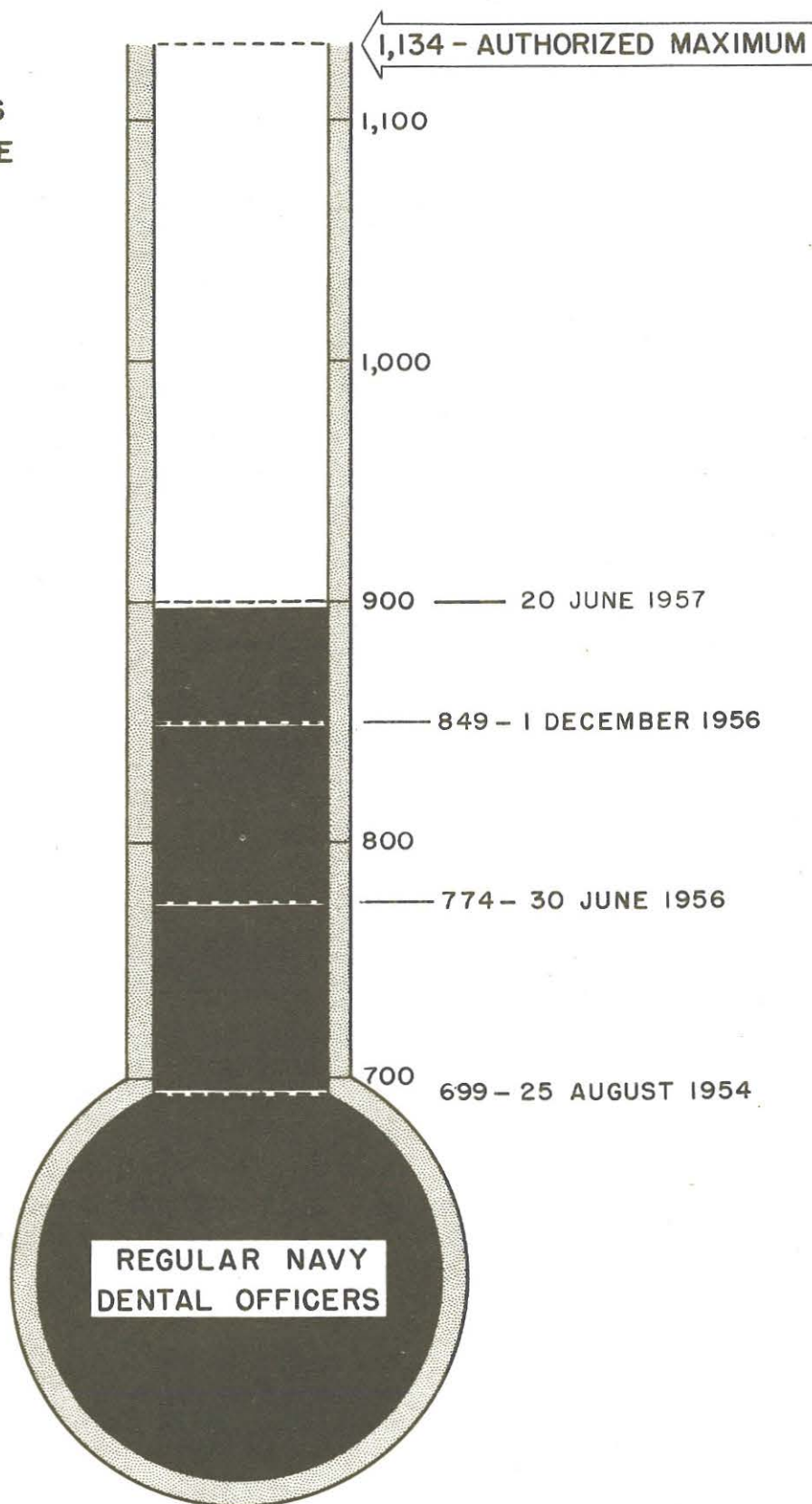
MARVIN J. MOLACEK

ROBERT E. MOURITSEN

RAY C. PAGE

ROBERT B. PECK

WILLIAM J. PORTER





MEDICAL RESERVE SECTION

More Terminology for Reservists

The following definitions, used throughout the Naval Reserve, are in addition to those listed in the Medical News Letter, Volume 29, Number 2 of 18 January 1957:

Reserve Component. Each branch of the Armed Forces has its own Reserve component and the USNR is the Navy's Reserve component. As a member of the Naval Reserve, you are a member of the Navy's Reserve component regardless of whether your participation consists of active duty, drills, active duty for training, correspondence courses, or whether you don't take part in any training program.

Special AcDuTra. Active duty for training in excess of 14 days, but not to exceed 90 days, is known as special AcDuTra. Approval must be obtained from the Chief of Naval Personnel ahead of time.

Group AcDuTra. This may be performed in addition to, but not in place of, the regular annual 14 days' training period authorized for members of pay units. Pay is not authorized for this type of training. It is not necessary to secure advance approval from the Chief of Naval Personnel.

Temporary Active Duty. This is a temporary assignment to full-time active duty for the purpose of performing a special task.

Total Mobilization. This is the expansion of the active forces to full wartime strength through the general recall of all Naval Reservists.

Associate Quota. This is the number of billets authorized for a unit in addition to its allowance for training, administrative, or procurement support purposes.

Team Training. This is intended to provide Reservists with training in general knowledge and skills required of all Navymen on active duty. It is not intended to be limited to general drill or battle problem exercises, but to teach seamanship, damage control, first aid, and the like.

Categories of Reservists. Every Reservist is either in the Ready, Stand-by, or Retired category.

Status of Reservists. Every Reservist shall also be in an active, inactive, retired, or suspended status.

Promotion Point. This is a numerical unit awarded for the successful completion of a defined portion of an approved training program for the purpose of establishing eligibility for promotion.

Retirement Point. This is a unit used to credit an individual for participation in Naval Reserve training and active duty for use in determining eligibility for retirement benefits.

Anniversary Year. For Reservists who entered the Navy prior to 30 June 1949, the anniversary year will be from 1 July to 30 June, or the same as the fiscal year. For those members entering after 30 June 1949, or whose Reserve service was broken after that date, the anniversary year extends from the date of entry or reentry for the purpose of computing a satisfactory year.

Satisfactory Year of Federal Service. The accumulation of a minimum of 50 retirement points in an anniversary year is considered a "satisfactory year."

(The Naval Reservist, June 1957)

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New Correspondence Course

The Medical Department correspondence course, Control of Communicable Diseases in Man, NavPers 10772, is now available to regular and Reserve officers and enlisted personnel of the Medical Department. This course consists of six (6) assignments and is evaluated at eighteen (18) Naval Reserve promotion and/or nondisability retirement points. Both rare and common diseases are presented. The discussions relate to the following subjects: prevalence of the disease and etiological factors; mode of transmission and incubation period; factors of communicability, susceptibility and resistance; laboratory diagnosis and clinical manifestations of the disease; treatment of infected individuals and contacts and the environmental and epidemic factors associated with preventive measures.

Applications for this course should be forwarded on NavPers 992 (Rev. 2-56) via applicant's command to Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md.)

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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AVIATION MEDICINE DIVISION

Air Crew Equipment Laboratory
Report No. NAMC-ACEL-337

ABSTRACT

The Air Crew Equipment Laboratory of the Naval Air Material Center evaluated the Sierra Engineering A-13A mask inhalation valve, model 226; in accordance with the requirements of Specification MIL-V-7553A(ASG). This type valve is designed to eliminate mask failures due to dirt or any other foreign material which could cause malfunctioning of the present valve.

Comparison tests were conducted to determine the advantages or disadvantages of (a) the Sierra inhalation valve, model 226, (b) the standard valve, (c) the Sierra knife edge seat type, ACEL drawing 700, and (d) the inhalation valve evaluated under project TED NAM AE-5166 of 19 April 1956 (prototype model of valve (c)).

It is concluded that valve (c) is satisfactory for service use, and that valve (a) be modified and resubmitted. Valve (b) should not be considered for future service use.

The Bureau of Aeronautics has procured a quantity of new inhalation valves for use with the A-13A oxygen mask. The valves are being distributed as follows:

Naval Air Test Center - 280 valves due in February
NavAirLant - 220 valves due in February
NavAirPac-220 valves due in March
Chief, Naval Air Training - 150 valves due in March

Immediate distribution of the valves is as follows:

VF-94 - 60
BuAer Representative, North American Aviation Corp. - 20
Naval Air Material Center - 20
Naval Air Station, Olathe, Kansas - 20

The Bureau of Aeronautics has procured an evaluation quantity of Hardman A-13A Oxygen Mask Retainer Kits, P/H 3740, for installation on the APH-5 helmets. The Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, Pa., is preparing a drawing of the Hardman suspension assembled to the APH-5 helmet which will contain all installation instructions. These drawings will be forwarded from the Naval Air Material Center directly to designated activities.

Fitting Evaluation of the DH-5 Protective Helmet

A fit test of the DH-5 Protective Helmet fabricated by General Textiles Company, was conducted using 31 military and 11 civilians as subjects. In head length, head breadth, and head circumference, they represented at least 95% of the USAF flying population. Twenty-six (26) subjects wore the medium size helmet, while 16 wore the large size. Of the 42 subjects measured, 39 were fitted in the size indicated by the sizing chart. Apparently, because of unusual variations in head shape, two subjects required upgrading and one required downgrading from indicated size. All subjects were eventually fitted comfortably in the DH-5 Helmet. It should be noted that the forehead and occiput areas of the head were emphasized as areas of fit, since inserts for earphone conformity were not available. (Activity Report from Aero Med. Lab., Wright Air Dev. Ctr. of 21 June 1957)

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BuAer Aviation Clothing and Survival
Equipment Bulletins

No. 3-57 of 4 June 1957. Of Interest to Flight Personnel, Flight Surgeons, Parachute Riggers, and Flight Gear Issue Personnel

Subj: Helmet, Protective, Pilots' - Type APH-5; modification of sponge rubber pads

1. Publications Affected: None
2. Purpose of Bulletin: This bulletin describes the modification of sponge rubber sizing pads currently used in type APH-5 helmets to incorporate a chamois covering. The intent of the chamois covering is to reduce any possible discomfort that might be experienced from the head contacting the sponge rubber pads.

No. 4-57 of 10 June 1957. Of Interest to All Flight Personnel and Parachute Riggers

Subj: Integrated Torso Harness Suits, modification of for use with partial pressure suits

1. Publications Affected: None
2. Purpose of Bulletin: This bulletin covers the modification of integrated torso harness suits so that they may be used with partial pressure suits.

No. 5-57 of 4 June 1957. Of Interest to Flight Personnel, Flight Surgeons, Parachute Riggers and Flight Gear Issue Personnel

Subj: Helmet, Protective, Pilots' - Type APH-5

1. Publication Affected: This bulletin cancels and supersedes BuAer Aviation Clothing and Survival Equipment Bulletin No. 8-56.

2. Purpose of Bulletin: This bulletin describes the new Navy standard pilots' protective helmet, type APH-5, and furnishes information and instructions relative to the changing and cleaning of visors, installation of visor springs, instructions for replacing electronic equipment, fitting techniques, and the listing of spare parts with the assigned source codes.
3. Application: This bulletin is applicable to the type APH-5 protective helmet and is of paramount interest to all flying personnel. It is suggested that fitting instruction film, prepared by, and available from the U. S. Naval Aviation Safety Center, be used to provide supplemental visual instruction on the fitting technique and the changing of the visor.

No. 10-57 of 7 June 1957. Of Interest to Flight Personnel and Parachute Riggers

Subj: Automatic Parachute Actuators; procedure to be followed in selecting MK 5 and Model 1000 for proper parachute and aircraft applications.

1. Publications Affected: None
2. Purpose of Bulletin: This bulletin describes the procedure to be followed in selecting MK 5 and Model 1000 automatic parachute actuators for installation in specific parachute and aircraft applications.

No. 11-57 of 15 May 1957.

Subj: Overhaul Instructions of Master Specialties Automatic Parachute Actuators

1. Publications Affected: None
2. Purpose of Bulletin: This bulletin describes the overhaul instructions for automatic parachute actuator, part numbers 1000-A and 1000-B, manufactured by Master Specialties Company, Los Angeles, Calif.

No. 13-57 of 21 June 1957. Of Interest to Flight Personnel, Flight Surgeons, Parachute Riggers, and Flight Gear Issue Personnel

Subj: Type APH-5 Pilots' Protective Helmet, Nape Strap Installation in

1. Publications Affected: None
2. Purpose of Bulletin: This bulletin specifies the details and procedures required in the installation of the nape strap in the type APH-5 Pilots' Protective Helmet. The installation of the nape strap will increase helmet retention; HOWEVER, IT SHOULD BE UNDERSTOOD THAT THE FULL EFFECTIVENESS OF THE NAPE STRAP CANNOT BE REALIZED UNLESS THE CHIN STRAP IS CINCHED UP IN A SNUG POSITION. Retention of the helmet under emergency conditions can be insured only by the proper fitting of the helmet to the user's head and the proper utilization

of the chin strap. The nape strap merely increases the retention provided basically by the chin strap. It must be remembered that the cinching up of the chin strap is an additional adjustment that must be done after the oxygen mask is positioned on the face. A survey on the helmet retention problem indicated that many a pilot is improperly fitted and, in addition, did not tighten the chin strap during flight.

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Inertia Reels

Some flight surgeons in letters and accident reports have made statements that indicate there is some misunderstanding of the operation of inertia reels. Below is an abstract on each type now in service. It is recommended that each flight surgeon obtain an inertia reel to observe and to serve as a demonstrating model from a crashed and/or stricken aircraft. It should be noted that the functioning of the reel can only be tested in the mechanical models by applying the inertia load. Hence, this cannot be accomplished in the aircraft. Usually it is done on a small test centrifuge, but a short deceleration test track is better from the dynamic viewpoint.

American Seating Company Case Locking - Model 03903, 2800# Test
 Model 04600, 4000# Test
 Model 11 , 4000# Test
 Model 21 , 4000# Test

Type plane example: F9F, P2V, TV and S2F

Mounted: Bottom flat surface toward nose of aircraft, unidirectional

Action: Reel with inertia lead engages fixed cogs on case; retained by staylock until released by manual control cycling. See BuAer Accessories Bulletin 4-53.

American Seating Company Electromagnetic Reel - MOD 10, 4000# Test
 MOD 20, 4000# Test

Type plane example: MOD 10, FJ2, 3, and 4; MOD 20, F7U

Mounted: Triggered - Micro Switch - Multidirectional, mounted in any direction. Switch located separately, vertically.

Action: Reel cogs held away from housing fixed cogs by electromagnet. Inertia on switch causes switch pendulum to break the circuit and reel engages housing cogs. By spring action the reel is held outside of field action of magnet so reel is not released from locked position with return of current. Must be released and put back into field of influence of electromagnet by manual control. Thus, has fail-safe feature.

Hardman Inertia Reel, MOD S-3388949-501-00, 4000# Test

Type plane example: F3D, F4D, and AD

Mounted: Longitudinally; undirectional

Action: Drum assembly with internal cogs rotates with paying out of cable around an off-center dog with cogs on it, called the locks. Inertia on another off-center dog, called the latch, throws the lock into mesh with the drum and remains locked until both dogs are repositioned by the manual control.

Pacific Scientific Reel, MOD HR30-1000 Series, 4000# Test

Type plane example: Found only in about 25 helicopters

Mounted: Any direction, multidirectional

Action: Locks on quick payout of cable. This is the only inertia reel in use by the Navy which utilizes payout of cable as locking feature.

Roller Type Reel: This is a new miniaturized version of reel, also case locking, utilizing instead of a cable, a dacron webbing. The 4000# test size is about 2" x 4" cylinder mounted horizontally and crosswise. To be used on T2V and FJ4 type aircraft.

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Acceleration

The problems of acceleration as they concern the aviation physiologist are changing in their emphasis from those centered about high G forces exerted over short periods of time (from fractions of a second to 2 seconds) to those of low G exerted over periods of 10 seconds or more. The former is well known in association with emergency situations, such as ejection and crash landing; the latter is familiar from certain flight maneuvers and human centrifuge exposure.

In the case of high G over a short period of time, indications are that protected human tolerance is adequate for survival under normal conditions as presently encountered in the positive, negative, and transverse G produced by ejection, buffeting, and crash landing.

The problem of tolerance up to 8 G acting over periods of 10 seconds or more has been minimized in the past by the use of the anti-G suit and the fact that aircraft have been maneuverable within G-tolerance limits of men and planes. Protection (in the form of the anti-G suit) has been adequate to minimize hazards for the pilot with average G tolerance under flight conditions to date. The question has been raised whether those men with lower G tolerance merit study for particular attention and protection; if not, perhaps

removal of those with lower tolerance from operational conditions where such exposures are routine and where subsequent failures in tolerance would be critical. With increasing speed of aircraft and less rapid completion of turns, the problems of longer-acting G focuses attention on the possible effect upon the pilot of relatively low G over periods of time running to and above 10 seconds.

The question also arises whether the mere tolerance to G to the extent of maintaining consciousness is enough; the effect of the stress upon the ability of the pilot to accomplish various tasks, such as tracking and carrying out precision movements both during or immediately following such exposure, must be considered. The results of research on men near, but under, the protected tolerance limit, indicate that the "fall off" in ability may run so high that the effectiveness of the pilot may deteriorate sufficiently to endanger even his survival. It becomes increasingly important that each pilot understand his own particular tolerances under critical stresses of G. He will then be better able to judge when the risk of certain maneuvers will be outweighed by his ability to maintain adequate accuracy and efficiency during and after their termination to successfully accomplish the tracking and associated skilled movements.

The aircrew effectiveness program of which the physiological training is a part contributes to the training of each crewman for the highest possible state of effectiveness under all circumstances; this includes the ability to judge and change reactions under a multitude of stimuli and conditions. Pilot error is more than an error in operational procedure leading to an incident or an accident; it may begin with failure to evaluate one's own tolerance limits of stress and, therefore, reach such levels that error becomes inevitable. Because such a large percentage of aircraft accidents are attributed to "pilot error," it becomes of paramount importance to reduce those stresses which lead to deterioration of judgment and loss of efficiency of operation.

Of these stresses, acceleration is an important consideration now and will probably become increasingly meaningful with the progress of single or multiple stage rocket flight with sustained acceleration at, or under, protected "tolerance limits." The term "tolerance limits" must be made to include more than just the ability to "take it"; it means an ability to withstand certain stresses and retain adequate efficiency to operate effectively and not invoke an emergency survival situation.

Brown and Lechner discuss techniques for emergency protection and basic protection in acceleration, the former being for preservation of life, the latter for maintenance and improvement of pilot efficiency. Work on emergency survival (escape, abrupt deceleration, and windblast) indicates that limits of human tolerance are adequate for such emergencies as are normally being encountered at this time in ejection from aircraft. The basic type of survival is becoming more important inasmuch as failure to maintain performance efficiency increases the probability of the development of an emergency survival situation.

Recent work on tolerance has been directed towards some understanding of the effects of long-term G on both physiological and psychological performance in such flight patterns as would be imposed by high-speed aircraft maneuvers. These studies indicate that 8 G's and lower over periods of 10 seconds or more may produce excessive central nervous system excitability not compatible with organized goal-directed performance as demonstrated in continuous (tracking) and discontinuous (trigger light test coordinated with tracking) performance. Inability to focus attention and respond effectively to tasks was attributed to increased excitability under stress conditions up to .4 G below the protected blackout level.

In tests of human tolerance to simulation of multistage rocket acceleration (from 1 to 8 G's) in conjunction with a 2-dial monitor test device, it was observed that distraction lessened with practice. However, individual variations ranged from little deterioration to marked deterioration. It was concluded that selected crewmen could be expected to assist in control of vehicles during acceleration. The idea of selection of crewmen with more tolerance on the basis of testing under simulated stress recalls an earlier unsuccessful program to select personnel with greater tolerance against bends. The tolerance to acceleration also appears to vary from period to period and may vary even greater under different combinations of stress not present in laboratory testing.

There is a need to correlate the effects of acceleration in combination with other common stresses imposed during flight; i. e., fatigue, noise, vibration, motion, hypoxia, fumes, et cetera. There is also a need to determine what part such psychogenic factors associated with boredom, apprehension, concentration, hunger, thirst, immobility, et cetera, play in the general acceleration problem. The goal should be to determine methods of adequate protection rather than to determine methods of selection. (James I. Kendall, Ph. D., USAF Aviation Physiology News Letter, March 1957)

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Facts About Extra Hazardous Duty Incentive Pay

Right to Incentive Pay Under Certain Conditions

Duty as Low Pressure Chamber Inside Observer or Human Acceleration or Deceleration Experimental Subject:

1. Members assigned to duty as a low pressure chamber inside instructor observer or human acceleration or deceleration experimental subject who are otherwise entitled to receive incentive pay for such duty will continue to be eligible during any month in which they meet requirements as prescribed, even though for a portion of the month they are:

- a. Sick in line of duty
- b. On authorized leave while in a pay status

- c. On temporary duty or detached service other than duty as instructor observer inside a low pressure chamber or serving as a human subject for experiments on acceleration or deceleration.
2. While a member is in a travel status or authorized change of station, or enroute to, or returning from, foreign service entitlement to incentive pay will continue through and including day of departure from old station. Entitlement at the new station is dependent upon orders issued and duty performed at the new station.

Accidents to Members Performing Hazardous Duty

Any member who is placed on flying status, low pressure chamber duty, or human acceleration or deceleration duty, and who becomes injured or otherwise incapacitated as a result of the performance of such duty, will be considered to have fulfilled all of the requirements for the performance of hazardous duty during such incapacity for a period not to exceed three months following the date as of which the incapacity is determined by the appropriate medical authority.

Substantiating Documents Required for Payment

Low Pressure Chamber Duty and Human Acceleration or Deceleration Experimental Duty:

1. Certificate Required. DD Form 122. Certificate for Aviation, Parachute, Glider, and Diving Pay, appropriately modified, will be submitted monthly listing those members who under competent orders have accumulated a minimum of 100 altitude exposure units or a minimum of 100 acceleration stress units during the month. The DD Form 122 will be certified by the commander or by an officer designated by him. If a member is entitled to incentive pay for a period other than that stated in the heading of the DD Form 122, the inclusive dates and appropriate number of units accumulated for the fractional part of the month will be entered on the DD Form 122.

2. Military Pay Order. DD Form 114. A Military Pay Order will be submitted for the first month of a period of incapacity to inform the disbursing officer that the member is physically incapacitated for low pressure chamber duty or acceleration or deceleration duty due to an accident, and to credit incentive pay for that month. The Military Pay Order will be signed by the commander or his designated representative and will contain a certificate to read substantially as follows: "I certify that the member named herein is physically incapacitated for (low pressure chamber duty) (human acceleration or deceleration duty), and that such incapacity resulted from participation in such duty. The incapacity originated on (date). During the period from (date) to (date) he continued to be incapacitated." The certificate must be dated and signed by the senior medical officer or other authorized medical department officer.

DD Forms 114 submitted to substantiate credit for low pressure chamber duty pay or human acceleration or deceleration duty pay for a second or third month of a period of incapacity will contain information identical to that shown on the DD Form 114 submitted for the first month of incapacity.

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Recent Experiences with Pressure Suit Garments

Case No. 1. On 24 July 1957, a pilot wearing a partial pressure suit and flying an F8U-1 had a flame-out at 52,000 feet. At the time of the emergency, the pilot made an almost vertical descent to 43,000 feet. This was accomplished at such a speed that the cabin pressure did not fall sufficiently to allow the suit to inflate. Restarts were unsuccessful and resulted in fire in the aircraft. The pilot ejected at 6000 feet and at an estimated speed of 220 knots. Manual opening of the parachute was accomplished and the pilot landed in the trees without injury.

Case No. 2. On 25 July 1957, a pilot wearing the new 2-pound full pressure suit flying an F8U-1 experienced a flame-out at 54,000 feet. Altitude was lost and at 52,000 feet the suit inflated. The pilot stated that he experienced no difficulty in setting up his flame-out glide path to the field while inflated. A successful flame-out approach was made.

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Captain Gell Given Award

Captain Charles F. Gell MC USN, Director, Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, received the Theodore C. Lyster Award presented at the twenty-eighth annual meeting of the Aero Medical Association which was held at the Shirley-Savoy Hotel, Denver, 6 - 8 May 1957. This award was established in 1947 in honor of the first surgeon of the aviation section, U. S. Army Signal Corps and is given annually for outstanding achievement in the general field of aviation medicine. Captain Gell—an authority on acceleration—is a previous winner of the John Jeffries award of the Institute of the Aeronautical Sciences.

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New Director - Division of Aviation Medicine

Captain Langdon C. Newman MC USN, former Director of the Division of Aviation Medicine, Bureau of Medicine and Surgery, was recently detached and has now reported and taken command of the U. S. Naval School of Aviation

Medicine, Pensacola, Fla. Captain Newman was succeeded by Captain Oran W. Chenault MC USN. Captain Chenault comes to the Bureau from the Naval Air Station, Pensacola.

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Fitness of Flying Personnel

OpNav Instruction 3740.7 of 25 June 1957, a new instruction on the subject of aviators' fitness, has been distributed. All flight surgeons should become thoroughly familiar with the provisions of this instruction and give maximum support to its implementation.

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The printing of this publication was approved by the Director of the Bureau of the Budget, 16 May 1955.

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